

CLAIMS:

1. A method for determining the concentration of a non-bound metal ion in a sample of serum or other biological fluids, comprising the steps of:

- a) providing a surface coated with a polymer-conjugated form of a metal chelator;
- b) bringing said sample into contact with said coated surface, under conditions and for a period of time sufficient to allow the metal ion to be captured by the metal chelator;
- c) bringing into contact with said coated surface, after completion of step b) above, a marker conjugated with a moiety that can be captured by the metal chelator;
- d) determining the amount of marker that has been released by capture of the metal ion by the coated surface; and
- e) calculating the concentration of the metal ion in the sample from the concentration of binding sites left available after step b) for capturing the metal ion bound to the marker.

2. A method according to claim 1, wherein the metal ion is non-transferrin bound iron (NTBI).

3. A method according to claim 1 or 2, wherein the polymer-conjugated form of a metal chelator is a desferrioxamine (DFO) polymer.
4. A method according to claim 1, wherein the surface is a multiwell plate.
5. A method according to claim 1, wherein the marker is a fluorescent marker.
6. A method according to claim 1, wherein the marker is an antibody which binds specifically to the DFO-Fe complex.
7. A method according to claim 1, wherein the marker is a chromogenic marker.
8. A method according to claim 5 or 7, wherein the marker is a calcein-iron complex.
9. A method according to claim 1, wherein the metal ion is aluminum (Al^{3+}).
10. Use of a polymer-conjugated form of a metal chelator for the determination of the concentration of a non-bound metal ion in a sample of serum or other biological fluids.
11. A polymer for use in the determination of the concentration of a non-bound metal ion in a sample of serum or other biological fluids, characterized in that it is conjugated to a metal chelator.
12. A polymer according to claim 11, wherein the chelator is DFO or a DFO derivative.

13. A polymer according to claim 11, wherein the polymer is selected from among polystyrene, polyethylene, polycarbonate, polyester polymers and copolymers, polysaccharides, acrylate-based poly(hydroxamic acid), and polypeptides containing hydroxamate groups.

14. A polymer according to claim 12 or 13, which is a DFO or DFO derivative conjugated to a polymer selected from polyacrylate, polyacrylate derivatives, polyacrylate copolymers, arabinogalactan, dextran, pullulan, cellulose and their derivatives.

15. A kit for the determination of the concentration of a non-bound metal ion in a sample of serum or other biological fluids, comprising a surface coated with a polymer-conjugated form of a metal chelator.

16. A kit according to claim 15, wherein the surface is a multiwell plate.

17. A kit according to claim 15 or 16, wherein the surface is coated with a polymer conjugated with DFO or a DFO derivative.

18. A kit according to claim 17, wherein the surface is coated with polymeric arabinogalactan-DFO or with hydroxyethyl starch-DFO conjugate.

19. A kit according to claim 15, further comprising a marker conjugated with the same metal ion the concentration of which it is desired to determine.